

Brookhaven National Laboratory National Synchrotron Light Source		Number: LS-PPS-0029	Revision: B
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Subject: <u>X5</u> Laser Interlock Test			
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*Approved signatures on file with master copy.
[Revision/Periodic Review Log](#)

Test Date:	Test Result: <input type="checkbox"/> Passed <input type="checkbox"/> Failed
Test Reason:	
Tester 1:	Assistant 1:
Tester 2:	Assistant 2:

This procedure addresses the testing of the X5 Ar-Ion laser and Nd-YLF laser.

1. Verify that laser power supply key is in (both lasers). _____
2. Verify that lasers are both off. _____
3. Verify that the key in Shutter Control Box #2 (SCB2) is turned to the *Open* position. _____
4. Verify that Shutter Control Box #1 (SCB1) key is in. _____

Test #1: Hutch Internally Interlocked.

5. Close hutch doors.
6. Press the Check Station # 1 (CS1) button.
 Light on CS1 box turns on. _____
7. Press the Internal Check Station # 2 (ICS2) button.
 Light on ICS2 box turns on. _____
Interlock light on SCB1 turns on. _____
8. Turn the SCB1 key to *open* position.
Enable light turns on. _____
Open light turns on. _____
 Both shutters open. _____
9. Turn the SCB1 key to *closed* position.
 Both shutters close. _____
Enable light turns off. _____
Open light turns off. _____
Close light turns on. _____

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10. Open a hutch door to break security.

Close hutch doors.

Press ICS2 button.

Light on ICS2 does not turn on. _____

Interlocked light on SCB1 does not turn on. _____

Turn SCB1 key to *open* position.

Laser shutters do not open. _____

11. Interlock laser hutch internally.

Open shutters.

Open downstream door.

Both shutters close. _____

Enable light on SCB1 turns off. _____

Open light turns off. _____

Close light turns on. _____

Interlock light turns off. _____

Cover Open fault indication appears on both laser remote boxes. _____

12. Interlock hutch internally.

Open shutters.

Open upstream door.

Both shutters close. _____

Enable light on SCB1 turns off. _____

Open light turns off. _____

Close light turns on. _____

Interlock light turns off. _____

Cover Open fault indication appears on both laser remote boxes. _____

Test #2: Hutch Externally Interlocked.

(An assistant is needed to stay in hutch during this test).

13. Clear faults on laser remote boxes.

14. Remove SCB1 key.

15. Close upstream door.

16. Press the CS1 button.

Light on CS1 box turns on. _____

17. Exit hutch through downstream door and close it.

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18. Press the *External Check Station # 2* (ECS2) button.

Light on ECS2 box turns on.

Walk to the External Shutter Control Box (ESCB) location and verify that *Interlock* light on ESCB is on.

19. Insert key into ESCB and turn it to *open* position.

Open light turns on.

Assistant verifies that both shutters inside hutch open.

Turn key to *close* position.

Assistant verifies that both shutters inside hutch close.

20. Open laser shutters.

21. Open downstream door.

Cover Open fault indication appears on both laser remote boxes.

On ESCB: *Interlocked* light turns off.

Open light remains ON.

Close light remains OFF.

22. Clear faults and interlock hutch externally.

23. Open shutters.

24. Open upstream door.

Cover Open fault indication appears on both laser remote boxes.

On ESCB: *Interlocked* light turns off.

Open light remains ON.

Close light remains OFF.

Test #3: Laser Emergency Stop Buttons.

25. Clear faults and internally interlock laser hutch.

26. Open shutters

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27. Press Laser Emergency Stop #1.

Cover Open fault indication appears on both
laser remote boxes.

Laser shutters both close.

On SCB1: *Interlocked* light turns off.

28. Clear faults and externally interlock laser hatch.

29. Open shutters

30. Press Laser Emergency Stop #2.

Cover Open fault indication appears on both
laser remote boxes.

On ESCB: *Interlocked* light turns off.

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